PATTERNING & ALGEBRA: Patterns and Relationships

Grade 4	Grade 5	Grade 6
Overall Expectation		
- describe, extend, and create a variety of numeric and geometric patterns, make predictions related to the patterns, and investigate repeating patterns involving reflections	- determine, through investigation using a table of values, relationships in growing and shrinking patterns, and investigate repeating patterns involving translations	- describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers), and investigate repeating patterns involving rotations
Specific Expectations		
- create a number pattern involving addition, subtraction, or multiplication, given a pattern rule expressed in words	– make a table of values for a pattern that is generated by adding or subtracting a number to get the next term, or by multiplying or dividing by a constant to get the next term, given either the sequence or the pattern rule in words	– make tables of values for growing patterns, given pattern rules in words then list the ordered pairs and plot the points in the first quadrant, using a variety of tools
- extend, describe, and create repeating, growing, and shrinking number patterns	- create, identify, and extend numeric and geometric patterns, using a variety of tools	– identify geometric patterns, through investigation using concrete materials or drawings, and represent them numerically
- connect each term in a growing or shrinking pattern with its term number, and record the patterns in a table of values that shows the term number and the term	- build a model to represent a number pattern presented in a table of values that shows the term number and the term	- determine a term, given its term number, by extending growing and shrinking patterns that are generated by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term
		– determine the term number of a given term in a growing pattern that is represented by a pattern rule in words, a table of values, or a graph
- make predictions related to repeating geometric and numeric patterns	– make predictions related to growing and shrinking geometric and numeric patterns	- describe pattern rules (in words) that generate patterns by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term then distinguish such pattern rules from pattern rules, given in words, that describe the general term by referring to the term number
- extend and create repeating patterns that result from reflections, through investigation using a variety of tools	– extend and create repeating patterns that result from translations, through investigation using a variety of tools	– extend and create repeating patterns that result from rotations, through investigation using a variety of tools

PATTERNING & ALGEBRA: Expressions and Equality

Grade 4	Grade 5	Grade 6
Overall Expectations		
- demonstrate an understanding of equality between pairs of expressions, using addition, subtraction, and multiplication	- demonstrate, through investigation, an understanding of the use of variables in equations	- use variables in simple algebraic expressions and equations to describe relationships
Specific Expectations		
- determine, through investigation, the inverse relationship between multiplication and division		
- identify, through investigation and use the commutative property of multiplication to facilitate computation with whole numbers		
- identify, through investigation , and use the distributive property of multiplication over addition to facilitate computation with whole numbers		
- determine the missing number in equations involving multiplication of one- and two-digit numbers, using a variety of tools and strategies	– determine the missing number in equations involving addition, subtraction, multiplication, or division and one- or two digit numbers, using a variety of tools and strategies	
		– demonstrate an understanding of different ways in which variables are used
	– demonstrate, through investigation, an understanding of variables as changing quantities, given equations with letters or other symbols that describe relationships involving simple rates	– identify, through investigation, the quantities in an equation that vary and those that remain constant
	– demonstrate, through investigation, an understanding of variables as unknown quantities represented by a letter or other symbol	– solve problems that use two or three symbols or letters as variables to represent different unknown quantities
		– determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies